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1795

INAUGURAL DISSERTATION

ON THE

D R O P S Y:

READ AND DEFENDED AT A

PUBLICK EXAMINATION,

HELD BY THE MEDICAL PROFESSORS, BEFORE THE

REV. JOSEPH WILLARD, S. T. D. PRESIDENT,

AND THE GOVERNORS OF THE UNIVERSITY AT CAMBRIDGE,
FOR THE DEGREE OF BACHELOR IN MEDICINE,

JULY 3d. 1795.

BY WILLIAM DIX, A. M.



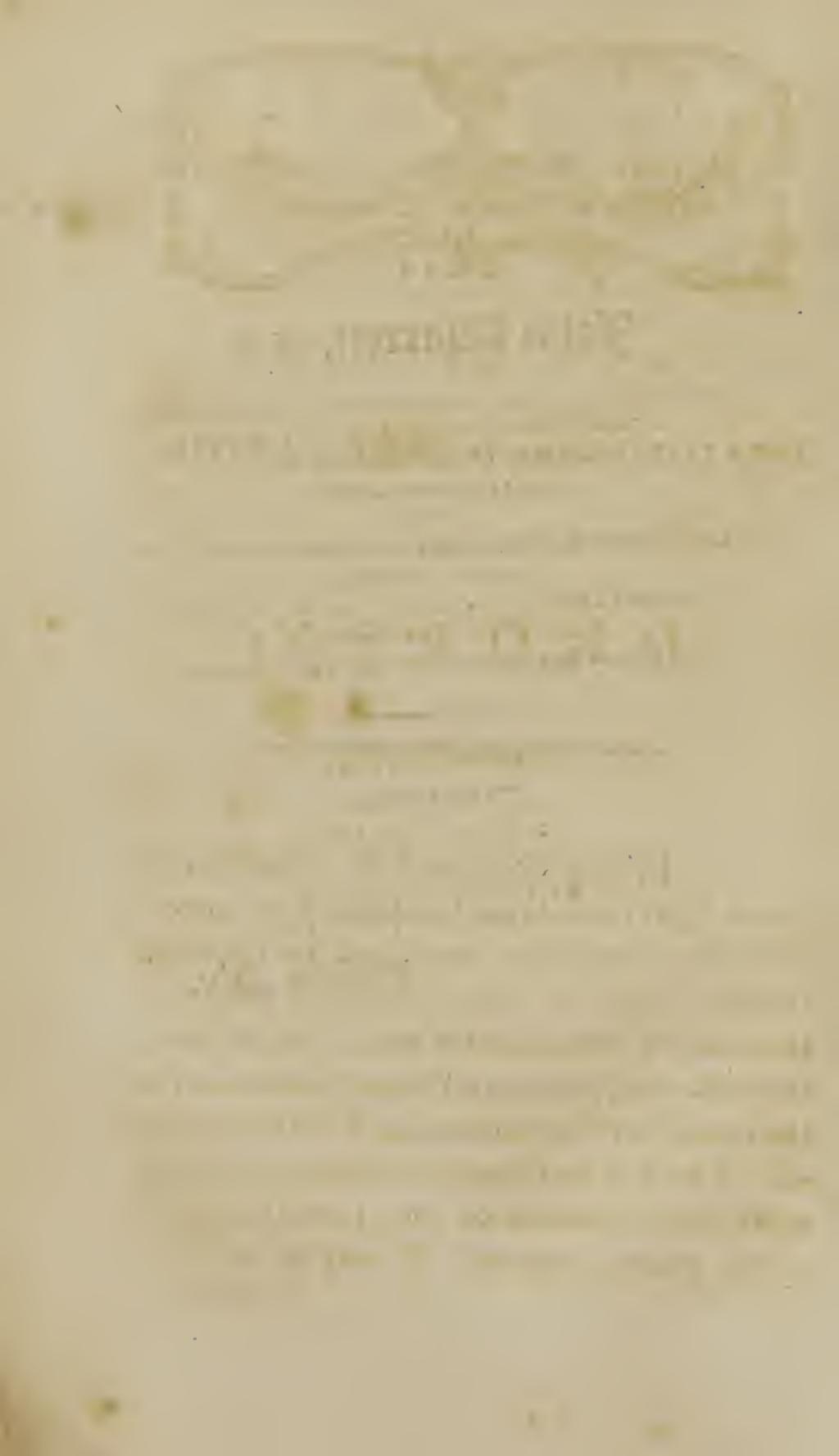
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TO

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AND SECOND VICE PRESIDENT OF THE HUMANE SOCIETY.

THE FOLLOWING
Dissertation
IS RESPECTFULLY
INSCRIBED
BY HIS OBLIGED AND
Grateful Pupil,
William Dix.



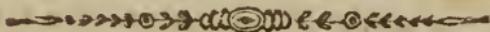


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INAUGURAL DISSERTATION

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D R O P S Y:



EVERY attempt by discussion to throw light upon subjects, obscured by imperfect information, or perplexed by opposing theories, must be acknowledged a tribute to the cause of science and of truth. In this view, the following pages must found their claim to the candor of the generous and the enlightened. The seat and causes of dropsy, its symptoms and indications of cure, form the subject of the present inquiry. It may be defined a collection

collection of water, or the serous part of blood exuded from the capillary extremities of the arteries into the interstices of the cellular membrane, or separately into cysts ; the former of which is called diffused, the latter encysted.

A MORE particular description of this disease, and its seat, will appear rather superfluous, since they are too well understood to need farther illustration. I shall first proceed to notice, as briefly as possible, some of its leading diagnostics, causes, and indications of cure ; then endeavour to elucidate the subject by some physiological inquiries ; remark on several medicines adapted to the cure, and conclude by relating a case, in which the operation of some particular medicines were attended with singular effects.

D I A G N O S I S.

THE serum, collected in a cavity in a disproportionate quantity, compresses its contiguous parts, and deranges the functions of the neighbouring organs. The symptoms are, in degree, according to the resistance of the sides of the cavity to the fluid ;

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The time in which it is filled ; the sensibility of the parts ; and the greater or less the importance of the surrounding organs. Water collected is generally clear ; but when its thinner parts are absorbed, it acquires a mucous consistence, and exhibits a variety of colors. When the fibres are macerated in this fluid, they become greatly relaxed. The water acquires a corroding* acrimonious quality by its stagnation, and its particles, being received into the circulating fluids, give rise to many formidable diseases,† which baffle the force of medicine, and evade the skill of the physician.

PROGNOSIS.

* From an hydrothorax, the fluid has been found to extremely acrid, as to erode the diaphragm, and pass into the abdomen.—Vid. Act. Medic. Berloin. dec. 1 Vol. vi. sec. 8.

THE water of ascites has been known to be so very astive, as to raise pustules upon the hands of the surgeon, and its effluvia so highly fœtid and contagious, that typhus has been the consequence.—Philos. Trans. No. 454. Sec. 4.

† Monroe,

P R O G N O S I S.

THE causes of this disease are numerous and various, resulting from the constitution, habits of indulgence, or abstinence, accidents and preternatural causes. Debility, from whatever source originating, may give rise to it; particularly from hemorrhages, or any excessive evacuation. Obstructions of the larger or smaller blood vessels, from polypi &c. Compression and stricture, as from gestation; and schirrous tumors situated near, or affecting the function of any important organ. It may likewise proceed from violent exertions; rupture of a vessel or hydropic cyst. Abuse * of fermented liquors. Rigidity of fibre, &c.

THE methods of cure are next to be treated of, which according to Doctor Monro have been divided into three: And no other division can, with more propriety, be adopted; and to him we would refer, as having given

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* SYDENHAM asserts that dropsy arises oftener from this source than any other.

a more minute description in his indications of cure. In taking advantage of that part of his work, we shall endeavour to bring into view those things, which might be deemed essential, or valued as most important.

THE first object is to remove the cause of the disease; second, to evacuate the water, and third, to prevent a relapse.

I N D I C A T I O N I.

IF the disease proceed from a relaxed state of the solids, remedies must be used for exciting the contractile power of the fibres; which may be done by a variety of medicines and applications, that strengthen and stimulate the habit. Friction is of singular advantage by exciting perspiration; exercise and gentle compression, by assisting the cohesion of the parts. Medicines of a pungent, bitter and astringent quality, fœtid gums, volatiles, fixed alkalies, acrid salts, preparations of iron &c. increase the oscillatory power of the fibres. Astringents, externally applied, are sometimes serviceable; but taken internally, are rather detrimental;

for, by uniting with the food and chyle, it is not allowed to pass freely through the smaller series of vessels. If the disease arises from obstructions,* tumors, schirri, imposthumes, polypi, &c. very little relief can be had ; except

* A REMARKABLE instance of a diseased ovary, in a child of about eleven years of age, under the care of Doctor Aspinwall at Roxbury, who, after attending six weeks, requested that Doctor John Warren of Boston might meet him in consultation. Upon their examination of the abdomen, it was found to be greatly distended with some fluid ; but the hypogastric region appeared to contain a hard, unequal, schirrus like substance, which was more or less perceptible in size and extent, according to the quantity of fluid contained in the abdomen, which at times was so great, as to obliterate the tumor, and could be felt only by considerable compression. It was agreed to make an incision immediately upon the tumor ; but no disease external of the peritoneum was found. The operation of paracentesis was then performed, and several gallons of a viscid fluid drawn off. Six days after, the child died. The water had again collected, in a greater quantity than before. The viscera in general were diseased. The omentum adhered to the surface of the intestines. The fallopian tubes and ureters were enlarged much beyond their natural size : And the left ovary, extending from the left towards the right side six or seven inches, exhibited numberless hydatids filled with gelatinous matter. This ovary, independent of any other viscus, weighed four pounds.

cept from surgical operations, or medicines appropriated to the cure of the original complaint. When it originates from rigidity* of the fibres, nourishing diet should be employed: The skin lubricated with penetrating oils. Warm water, impregnated with the mineral particles of sulphur, salt, or iron may be used. If a vessel be ruptured, no assistance can be given, unless there be access to apply a ligature, or some styptic medicine.

INDICATION.

* It is a query with some, whether rigidity of fibre ever produces the dropsy; in answer to which I would observe, that the capillary extremities of some of the veins, which are less elastic and more easily affected than those of the arteries, may be rendered impervious from rigidity; and therefore, the whole circulating mass of blood, being brought into a less sphere of action, is returned to the heart in the same given time: And the increased velocity, which from this circumstance it must necessarily acquire, may not improbably occasion a rupture of some smaller vessel.

DOCTOR DONALD MONRO asserts that rigidity of fibre does take place, and its authenticity ought not to be doubted, since he not only relates several cases, which came under his own observation, but alludes to many others, which have been attested by gentlemen of equal veracity.

INDICATION II.

THE second method of cure is performed either by natural or artificial openings. The natural openings are by the extremities of the veins, whose power must be increased sufficient to absorb more of the fluid than the arteries pour out. If the water is absorbed and mixed with the blood, it must be immediately expelled. For this purpose the serous and aqueous excretions, which are made from the stomach, intestines and urinary passages, the skin and salivary organs, are to be increased. This is performed by emetics, cathartics, diuretics and sudorifics. Emetics promote the oscillation of the solids, by compressing the viscera. They are cautiously to be employed, when the patient has been subject to hemorrhagy, threatened with lethargy, or laboring under a dispnea. When given in small doses sufficient to nauseate, and frequently repeated, they often prove to be cathartic, diuretic and sudorific. If the hydropic water be evacuated by drastic purges, the system becomes greatly weakened;

weakened ; and in fact, they are injurious rather than beneficial, whenever this takes place.

MEDICINES of the diuretic class have often proved fallacious ; for, by increasing the urine, they are said to relax the solids. The neutral salts and native acid of vegetables promote the excretion of urine, and tend also, to lessen the irritability of the system ; and therefore, cannot strictly be considered as diuretics.

WHEN these refrigerants are employed, stimulants should be administered at the same time. If the diuretics fail of carrying off more water than is exuded from the arteries, they are injurious. The skin, which ought to be attended to, is generally dry ; this is to be corrected by diaphoretics, friction and stimulants. Mercurials, antimonials and their preparations, all readily increase the cutaneous excretions. Opium has the same effect ; but antimony combined with opium, is much more powerful and efficacious. Doctor Monro particularly recommends that, where friction is necessary,

ry, it should be performed with flannels, impregnated with aromatic fumes ; and the external air excluded from the body, to assist the operation of medicines, which are internally received.

THE absorption of the fluid cannot easily be effected from cavities, which are greatly distended, without previously relaxing the sides of the cavities, or drawing off a part of it ; for the absorbent veins cannot have power to act, when the pressure is so exceedingly great. When the artificial methods of lessening the quantity of water become necessary, the evacuation must not be made suddenly ; for the pressure being diminished, and the blood from the heart, finding less resistance, will overstretch the relaxed parts, and often produce inflammation or gangrene ; and at the same time, the other organs, being deprived of their proportion of blood, will become paralytic, or unfit for performing their several functions. The ill effects, which sometimes occur from taking away these waters, are to be obviated, by moderately discharging them at different times ; by compressure

compression upon the part, from which they are taken, and administering such medicines as tend to give vigor to the habit, and restore its lost energy.

I N D I C A T I O N III.

THOUGH the two first indications may have been in general pursued with success, yet there is a third, which ought ever to be attended to with care. There are few diseases, in which patients are so liable to a relapse, as in this. Those, who have recovered from this dangerous disease, ought rigidly to pursue the use of corroborants, and avoid preternatural evacuations, until the system has recovered its natural tone, strength and vigor. The cold bath, which heretofore would have been injurious, may now with safety be employed.

WHAT has hitherto been said may be considered as the outlines of the symptoms, causes, and cure of this disease ; a disease, which, though in its various stages has frequently been successfully treated by many of those methods, which have been pointed out, yet

yet as often has refused to yield to the most powerful of these applications.—As yet there has been no remedy found in the gardens of philosophy ; no curative plan as yet adopted, which proves an effectual antidote to this disease. Though it has long been a subject of diligent investigation among the learned ; its cure, of repeated experiments by many ; yet there are principles of importance, which have escaped the notice of some, eluded the search of others, and still remain in a degree of obscurity.

FROM the confined limits of this dissertation, some few hints only can be suggested, which it is hoped may be farther illustrated by some one, whose ingenuity and experience may better enable him to attain so important an object ; so invariably the pursuit of the friends of humanity.

As a symptom of this disease, there is sometimes observable a diminution of urine, thick and high colored, without any other thing remarkable preceding the approach of hydroptic swelling. It has generally been supposed that loss of tone in the vascular system

system alone has been the cause ; but if this be the case, why is not the superabundant water evacuated by drastic purges ; for by these the absorbents are stimulated to an increased action ? To this some may object and say, that the outlets by the intestines are insufficient to conduct off so large a portion of fluid ; but if the whole mass can be diminished by this method, as it undoubtedly may, why is it not entirely carried off by a repetition ? Others may again argue, that the stimulus produced by cathartics cannot be carried beyond a certain point, and that the debility will be in proportion to the increased action of the vessels, and that therefore a repetition of them proves ineffectual. This may be admitted ;—but where tonics are given in the intervals, in proportion to the increase of stimuli, the debility produced cannot be so great as to forbid a repetition of them. But experience and observation shew, that a large quantity of hydropic fluid is seldom carried off by cathartics alone, which evinces that some other plan ought to be pursued, since nature never designed these organs to be the vehicles of water.—During the operation of the drastic

purges, when the secretion of urine has been previously impeded, the stimulus, excited upon the absorbent vessels, has been found to have no effect upon the urinary passages. Hence arises a more natural inference, that the latter are affected independent of the former ; and that the increased action of the *one*, does not produce a similar effect on the *other* : Therefore the obstruction of urine depends on a diminished energy of its own organs.

DOCTOR MILMAN relates a case, in which an ascites took place in consequence of a free use of barley water, by a patient, who had recovered from an inflammatory fever. The general opinion has been, that a disease, occasioned in this way, was to be attributed to the attenuating quality of the liquor thinning the blood. But this cannot be conceived as probable, or even plausible, if the effects, which cold has upon the body, are considered. For let a man in perfect health, while warm, and in free perspiration, drink immoderately of cold water, and it will often produce an hydrothorax, or an ascites, in a short time. This does not happen from any defect

defect of the absorbents, but simply from a condensation of the vapor, which is constantly exhaling from the extremities of the arteries. The cold acting so immediately upon the stomach, the parts, which are contiguous to it, become affected; and thereby causing a diminution of vital heat, the vapor condenses, and causes a swelling which is more or less, according to the degree of cold; and increases by the absorbents being sooner affected, and possessing less elasticity than the arteries.—This may be illustrated by adducing so familiar an example, as the sweat upon a can of cold water, which operates in the same way, and upon similar principles; for the water within, possessing less heat than the atmosphere, condenses the vapor upon the external surface of the vessel. Hence it is seen exhibiting the form of sweat or drops; which appearance it would not have made, had not the water been cold. It therefore appears, that this collection is not produced so much from the attenuating quality of the liquid, as from the effects of cold; and though the swelling may not be immediately brought on; as happened in the case related by Doct-

or Milman, yet the neighbouring vessels were so frequently rendered inactive, the swelling ensued in consequence of the repeated application of cold drink.

WHAT has been said with respect to dropsy, being the most common effect of cold substances, when taken in too great quantities into the stomach, naturally leads to the enquiry ; what constitutions are most subject to it ; and why dropsy, independent of cold, oftener exhibits itself in the form of ascites, than any other species of the disease. — Those delicate habits, which are more frequently met with in females, are most liable to it. This in part may be accounted for, from the laxity of fibre, and preternatural evacuations, so peculiar to them ; and, as they are more or less copious, may be considered as constituting one predisponent cause of the disease, which is in proportion to the evacuation.

PERSONS of both sexes are more frequently affected by ascites, than any other species of the disease ; and not recollecting that any physiological

physiological reason has as yet been assigned, it may not be improper to offer a few ideas on the subject.

WHEN we view the structure of the human machine, in proportion so exact, and in symmetry so exquisite, we find the parts all nicely adapted to its various motions ; and formed to defend it from accident and misfortune. Some parts there are however, which appear to be less guarded than others. Among the first and most important is the abdomen and its contents. But this seeming defect is undoubtedly a wise provision in nature ; for if it were guarded in the same manner as the thorax, with cartilages and bones, the motions of the whole body would be much restricted, and the operations of nature confined ; respiration would be greatly impeded, and the circulation of the blood diminished ; the growth and expulsion of the foetus would be impossible ; the heart and lungs subjected to much injury from inflammatory diseases, not being able to receive assistance from the action of the abdominal muscles and diaphragm : The compound action of the lungs, dia-

phragm

phragm and abd. musc. facilitates the expelling of air, the dislodging of any offending or extraneous matter, and the cure of disease.— Though not secured by bones and cartilages, it fortunately possesses an elastic property, the advantage of which is evidenced in a variety of instances ; viz. diseases of the liver, inflammation, gestation, &c.—From whatever cause the abdomen is over distended, the vessels of the peritonæum may lose their elasticity ; or a rupture of their coats be produced, and dropsy ensue. These vessels being much thinner than those of other parts, become the soonest affected, and suffer more from debility.

THE abdomen being the least fortified part ; its muscles possessed of a less degree of firmness ; the thin and delicate texture of the peritonæum, all unite in rendering it more liable to relaxation and disease : And these are most probably the principal reasons why this species of dropsy more frequently occurs.

THE use of liquids in this disease, whether beneficial or detrimental, has been a point unsettled

unsettled and much controverted among physicians : Some contending that they should never be denied, nor considered as increasing the disorder ; while others maintain that they ought carefully to be avoided, and a nutritive and phlogistic regimen pursued. No doubt there are different cases in which either method may be adopted ; where one plan is to be followed, and the other avoided. This will be most easily accounted for by considering the causes of thirst, so often a concomitant of dropsy, and referable to an alteration, or change, in the blood. Not meaning to intimate that diseases really exist in the blood, but that it undergoes some alteration, or acquires certain properties from affections of the solids, whereby it may be said to be in a vitiated state. Thirst may be considered as an uneasy sensation, arising from a depletion of the lymphatic vessels of the mouth, fauces and œsophagus ; attrition upon the coats of the stomach and intestines, and the humors of the primæ viæ becoming so acrimonious as to irritate their fibres. Now it remains a question, whether the thirst is produced by the blood parting with the serum, and the remaining crassamentum becoming

coming acrimonious ; or whether it depends on the paucity of fluids contained in those vessels. Doctor Cullen asserts that there is no tenacity in the fluids ; which idea is generally adopted. But then he does not deny that there may be a thickening of the blood. The serous part being chiefly separated, the remaining crassamentum must necessarily be more dense ; and the same cause, from which this density arises, diminishes the whole mass of circulating fluids. It therefore appears natural to suppose, that thirst originates from the want of thin and diluting liquids to defend the coats of the vessels from those grosser parts of the blood, which exist in the crassamentum, than from a mere diminution of the fluids.

THE stomach when evacuated indicates no necessity of being replenished with liquid more than solid substances. But let the latter be given alone, and a great degree of thirst takes place ; which shews that it is altogether dependant upon irritation : For the secreted humors of the stomach, without the addition of other liquors, being insufficient to mace-rate and dissolve the aliment taken into it, admit

mit of friction upon its coats. In conjunction with this, the disorder is increased, the humors become depraved, and the stomach further debilitated. The skin, in particular, becomes very dry ; from which circumstance a phenomenon takes place, on which we may account for the increase of waters, though drink has been cautiously avoided for a long time. This kind of diet so much conspires with the disease, that in hydropic persons, who take no drink, a large quantity of fluid will be imbibed from the air ; so that this extraordinary inhalation of moisture must be imputed to the attraction, which the skin has to it, from the denial of drink and nature of the aliment. The same principles will apply to the blood. For in fevers an uncommon degree of thirst is always found. Now the blood, moving with greater velocity from the increased action of the vessels, produces great irritation upon its coats ; and this propensity for liquids is in exact proportion to the irritability of the vessels, and the increased velocity, with which the blood moves. The immediate cause of this irritation is the attrition of the red globules upon the coats of the vessels, which creates a

frequent contraction of them ; and according to their abundance, will be, not only the contraction, but subsequent irritation. A variety of arguments might be brought to prove that inanition of the vessels does not, in the least, occasion thirst ; but that it proceeds from the causes above mentioned. For if it could possibly arise from inanition, why would it not take place most sensibly after a copious hemorrhage ? It may therefore be inferred, that thirst has the same origin, both in fever and in dropfy, viz. irritation ; and that this is produced, in the latter, by the crassamentum being deprived of the serum ; and the red globules bearing too great a proportion to the whole mafs of blood.

FROM what has been said, it appears evident, that the thirst, arising from the blood parting with the serum, the crassamentum being condensed, and probably becoming acrimonious, renders obvious the benefit resulting from the free use of liquids. One exception may be made to this rule. In diseases of the mesentery and its glands, with schirroosity of the liver, the operation of the most powerful diuretics has proved unsuccessful ; and therefore

therefore the opposite mode of treatment may be more properly employed.

To treat this subject methodically, it will be necessary to take into consideration some few medicines, which are best adapted to evacuate a collection of hydropic water.

ALTHOUGH the diuretic plan has been esteemed as doubtful and uncertain, from its failure in some instances ; yet, from many experiments and observations, it appears to be the only sure method of remedy. To value it then, as the grand desideratum in the cure of the disease, may be highly proper.

THE cream of tartar may be recommended as a safe and useful diuretic, possessing superior virtues, and producing remarkable effects. Doctor Milman bestows some encomiums upon this medicine, and relates many cases, in which it obtained the most flattering success. He very justly observes, that " the best diuretics can have no effect, unless combined with plenty of diluting liquors." In confirmation of this, we would refer to fifteen cases of hydropic patients, narrated in the *Acta Bononiensia*, who continued the use of cream.

cream of tartar from thirty to forty days, without any perceptible effect ; but what was remarkable, they were afterwards cured by half an ounce of it taken every day in a large quantity of water ; which method discovered its peculiar efficacy and salutary effects, by causing a plentiful flow of urine in a few hours.

THE *digitalis purpurea* has acquired a degree of celebrity among many. But the virtues, which are ascribed to it, I do not think are to be depended upon ; for I have seen several instances, in which it has failed of that success, which is so generally attributed to it. Indeed I have never known an instance where the same effects might not be produced, and with greater advantage, by the *nicotiana*. Doctor Fowler strongly recommends, and highly extols the virtues of this plant, the application of which has been attended with great utility.

I WOULD beg leave to conclude by relating a case of *anasarca*, which came under my cognisance during my pupilage.—A married woman, of about thirty years of age, naturally of a delicate and slender constitution, had been

been troubled with various complaints from the age of fourteen. She had been married three years, during which time her disorders were obstinate and lasting.—Medical assistance was repeatedly resorted to, from which temporary relief was often obtained. During the last six months of her illness, from some of the following symptoms, she fancied herself pregnant, which afterwards was not found to be the case. She complained of great nausea, coldness of the extremities, syncope, &c. which were succeeded by a bilious fever, that terminated but to be followed by a disease equally alarming and distressing. Her catamenia now were obstructed, a swelling of the lower extremities took place, which daily increased and became more formidable. The general mode of treatment was pursued, such as cathartics, some few diuretics, scarification, friction, compression, vesication, tonics, emetics, &c. but all without any visible effect, or permanent advantage. A hectic pulse and great expectoration followed, attended with regular exacerbations, which betrayed strong marks of an affection of the lungs. The distension of the abdomen and lower extremities was excessive, and even threatened a rupture of their fibres ; and though part of the water was

was evacuated by scarifying and blistering, it soon returned with rapid increase. Her stomach had become so irritable as to reject almost every tonic preparation except the *Lig. Quass.* A diarrhea ensued, which indicated a tendency to putrefaction, accompanied with dyspnea, and a suppression of urine. Her situation now exhibited a truly melancholy appearance ; and afforded no hope of recovery, or prospect of relief. As almost every probable means that had been employed proved abortive, and death seemed rapidly advancing, a digression from the common mode of practice could not be deemed improper ; and even vague experiment might be justifiable. Accordingly the tincture of cantharides was administered in repeated and large doses. This had no great effect, for the first eight hours, excepting a sense of heat and great thirst. A little weak beverage was now permitted. It must be remarked that liquids had before been prohibited ; and at this time were rather sparingly given. But nature now seemed to be roused from that torpid inactivity, which had so completely invaded the whole system. The urinary passages were relieved, and a free and copious discharge induced. The absorption and evacuation

ation of a greater part of the superabundant fluid was effected, in the course of four or five days. Tonics at the same time were administered, in the greatest possible quantity, that the stomach would allow. Bandages were employed to assist the contractility of the parts, and prevent a relapse. But this appeared to be the last effort of nature to rid herself of a disease, which had become insupportable. Dyspnea and faintness now succeeded, which increasing threatened a total suspension of the functions of life. The energy of the system, being insufficient to continue a reaction, from the extreme debility, to which she was now reduced, sphacelus commenced and dissolution ensued.

THE body was afterwards examined, and the lungs were found to be diseased, and some of the viscera of the abdomen.—A relation of this case may serve to shew, that the internal use of cantharides may be freely and with safety employed. And though in this instance there was a fatal termination, yet it ought to be no argument against a repetition of the same medicine; for other coexistent diseases were of themselves sufficient to produce

produce death, though perhaps not so suddenly.

I HAVE taken the liberty to make these statements, with circumstantial minuteness, where it was deemed necessary, and pursue these inquiries with freedom. They are submitted, with the hope, that they may meet the indulgence, and the wish that they may be honored with the approbation of the respected Patrons and Professors of Medical Science.



FINIS.



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